Manufacturing Engineering

Introduction

The Bachelor of Science degree program in Manufacturing Engineering is designed to prepare engineers as experts in the production process, from design through manufacturing. As a team member, the manufacturing engineer works with other professionals in the design of products, particularly from the point of view of the efficiency of production. They are responsible for selecting the right materials for various product applications and for determining methods used in processing raw materials into finished products. Using computers, they design and control automated systems capable of rapidly making the product. Manufacturing Engineers are part of the company's management team and make important decisions regarding production planning, inventory, scheduling and quality.

To be admitted to the B.S. in Manufacturing Engineering program, students must have graduated in the top 40 percent of their class or, for high schools that do not rank, have a cumulative grade point average of at least 3.0 on a 4.0 scale or receive a composite score of 22 or greater on the ACT or equivalent score or greater on the SAT (*ACT is preferred*). In addition, an ACT math score of at least 22 or equivalent score on the SAT is required.

Through intensive hands-on laboratory experience, which is the heart of UW-Stout's teaching strategy, the program emphasizes application of theory to solution of real world problems. Manufacturing Engineering students learn modern production tools, such as computer-aided design and manufacturing (*CAD/CAM*), robotics, programmable logic controllers, computer simulation of production environment and modern manufacturing management techniques. Students have opportunities to function as members of production teams as they practice concurrent product design, material selection, appropriate manufacturing method selection, and automated production systems design.

The UW-Stout Manufacturing Engineering degree is accredited by the Engineering Accreditation Commission of ABET. It is the only nationally accredited manufacturing engineering degree in Wisconsin. There are many opportunities for cooperative learning and internship experiences with regional companies, providing industrial experience and that extra "edge" when applying for jobs upon graduation.

General Requirements
Bachelor of Science Degree

Total for graduation	132
General Education	43
Major Studies	89

Program Requirements

General Education

43 credits required

A. Communication Skills — 8 credits

ENGL-101	Freshman English – Composition *or*	
ENGL-111	Freshman English – Honors I	3
ENGL-102	Freshman English – Reading and Related Writing *or*	
ENGL-112	Freshman English – Honors II	3
SPCOM-100	Fundamentals of Speech	2

B. Analytic Reasoning — 8 credits

MATH-153	Calculus I	4
MATH-154	Calculus II	4

C. Health and Physical Education — 2 credits

Courses must be from areas of health, physical education or nutrition.

D. Humanities and the Arts — 9 credits

Courses must be from three or more areas including art history, creative arts, foreign language and culture, history, literature, music appreciation, performing arts and philosophy.

E. Social and Behavioral Sciences — 9 credits

Courses must be from three or more areas including anthropology, economics, geography, political science, psychology and sociology.

F. Natural Sciences (with Lab) — 5 credits

CHEM-135	College Chemistry I	5

G. Technology — 2 credits

Major Studies

89 credits required

Mathematics and Basic Sciences		20 credits
CHEM-341	Chemistry of Materials	4
STAT-330	Probability and Statistics for Engineering and the Sciences	3
MATH-250	Differential Equations With Linear Algebra	3
PHYS-281	University Physics I	5
PHYS-282	University Physics II	5

Engineering Core		15 credits
MECH-293	Engineering Mechanics	3
MECH-294	Mechanics of Materials	3
MFGT-150	Introduction to Engineering Materials	3
MFGE-275	Applied Thermodynamics and Heat Transfer	2
ELEC-290	Circuits and Devices	4

Materials and Manufacturing Processes		15 credits
MFGT-251	Polymer and Composite Processes	3
MFGT-252	Material Removal and Forming Processes	3
MFGT-253	Joining and Casting Processes	3
MFGE-351	Manufacturing Process Engineering I	3
MFGE-352	Manufacturing Process Engineering II	3

Process, Assembly and Product Engineering		12 credits
MFGE-441	Design of Fixtures, Jigs and Tooling	3
MFGE-405	Capstone I: Product Design	3
CADD-112	Principles of Engineering Drawing I	3
CADD-436	Computer Assisted Design Problems	3

Manufacturing Integration Methods and System Design		17 credits
MFGE-325	Computer Aided Manufacturing	3
MFGE-410	Capstone II: Manufacturing Systems Design	3
MFGE-415	Machine Vision and Robotics	2
MFGE-440	Design and Simulation of Manufacturing Systems	3
MFGE-363	Controls and Instrumentation	4
MECH-391	Fluid Mechanics	2

Manufacturing Competitiveness		9 credits
INMGT-335	Lean Manufacturing Systems	4
INMGT-422	Quality Engineering	3
INMGT-300	Engineering Economy	2

Professional Selective — **1 credit**

Select additional credit from list of approved professional courses.